



**NOAA Teacher at Sea**  
**Elsa Stuber**  
**Onboard NOAA Ship McARTHUR II**  
**June 4 – 9, 2007**

**NOAA Teacher at Sea: Elsa Stuber**

NOAA Ship MCARTHUR II Cruise S307

Mission: Collecting Time Series of physical, chemical and biological data to document spatial and temporal pattern in the California Current System

**DAY 4: Wednesday, June 6, 2007 at sea**

Visibility: clear

Wind direction: 291

Wind speed: 16 knots

Sea wave height: 2-3 ft.

Swell wave: 5-7ft.

Sea temperature: 14.671 C

Air temperature: 16.1 C

Sea level pressure: 1021

Cloud cover: 25% scattered cumulus

**Science and Technology Log**

Up at 07:00

Discussion continued on how to do deep casts with CTD and avoid kink in wire: lower it slower or put on more weight or etc. Some staff short on sleep after working with CTD repair last night. I do fine on six hours a night but I feel it when it's five. I will try for a nap today.

Cast 13 and 14 were done with other staff and went without problems. They will try a deep cast again today.

Cast 15 08:00 Station 65-90 Latitude 35.03387N Longitude -127.45604 W at depth to 1000 m; CTD cylinders tripped at 1000, 200, 150, 100, 80, 60, 40, 30, 20, 10, 5, 0 meters. In the wet lab work the funnel for sample #8 was not locked tightly and the apparatus leaked. I put on a new filter and took another seawater sample for #8. Samples processed and stored. Data for cast is Table 7 at the end of the report.

The two 4' by 6' incubators on deck contain the C14 spiked samples placed in a continually flowing seawater bath for twenty-four hours. Samples are placed in metal tubes with various numbers of holes in the tubes. The various tubes are designed so that the samples are exposed to 50%, 30%, 15%, 5% and 1%. One set of samples is not in tubes, but in full sunlight. Then they are evaluated for the rate the phytoplankton incorporate the Carbon 14 as described in Day 3.

Began chlorophyll analysis on the filtered specimens from the range of depths at each station that have been in the freezer more than twenty-four hours.

Marguerite went over the procedure using the flurometer to process the sample. It must be turned on at least one hour before running the tests and the chlorophyll samples #1-12 plus 1 and 5 micron samples must be at room temperature in the dark for at least one hour before beginning. She calibrated the flurometer with acetone. We rinse the cuvette three times with a couple of milliliters of sample, and then add the remainder to the cuvette. It will be about 2/3 full or more. Wipe the cuvette well with a lab wipe to remove any oil on glass from your hand/fingers, place sample gently into flurometer. The first reading should be taken after it has stabilized, usually 15-20 seconds. Then two drops of 5% hydrochloric acid are added to degrade the chlorophyll pigment. A second reading is taken to measure the remaining pigment. These are recorded on a "Bottle Sample Data Sheet", an example of which is included as Table 8 at the end of the report. After measurements are recorded, the sample is thrown out in a collection container and the vials disposed of in a waste container.

The cuvette is rinsed three times with acetone and then begin processing the next sample. Again it really helped to have seen this procedure demonstrated on the DVD that was sent to me ahead of the trip. I was much better prepared. It was important for the research done as well because if one made a mistake in the sample procedure, there was no sample in reserve to be able to run the test again. I did samples for a couple of hours in the afternoon and a couple more in the evening when I was scheduled for working but waiting for a cast to come up.

Cast 16 and 17 were processed by other team

Cast 18 @ 15:35 Station 67-90 Latitude 35.4670N Longitude -124.9409 W Cast depth 4380 went very well. Processed by Erich and Charlotte. Cylinders tripped at 4380 bottom, 4000, 3500, 3000, 2500, 2000, 1500, 1000, 750, 500, 250, 0 meters; Data for cast as Table 9 at the end of the report.

I observed a couple of bongo net tows today. Live net tows are collecting zooplankton and other seawater specimens from the first 200 meters of depth. The bongo nets have two .8-meter diameter rings with a mesh net and a polycarbonate tube at the end. The nets were deployed using the ship's starboard winch equipped with at least 300 meters of wire. The ship maintains a vertical wire angle during the tow of approximately 45 degrees. Kit Clark, the oceanographer in charge of net tows said it was important that the winch be able to maintain a slow, constant retrieval speed. When nets are retrieved, they are hosed down to wash specimen sticking to the mesh down into the polycarbonate tube. The specimens are transferred to jars and fixed with formalin. There were a lot of krill and one viper eel in the specimens I observed this morning.

Wildlife observer saw three albatross today.

Cast 19 @ 21:14 Station-NPS-8 Latitude 35.325665 N Longitude 124.438304 W Cast depth 1000 meters; Cylinders tripped at 1000, 900, 800, 700, 600, 500, 400, 300,

200, 100, 50, 0 meters; Nutrient samples only taken for this cast; Data for cast is Table 10 at the end of the report.

Cast 20 @ 11:29 Station 67-85 Latitude 35.6249 N Longitude -124.5544W

Cast depth 1000 meters; CTD cylinders tripped at 1000, 200, 150, 100, 80, 60, 40, 30, 20, 10, 5, 0 meters; Bottle # 2 leaked, was empty, so no sample collected. Always check that funnels are locked tight before I begin. Samples processed and stored; Data for cast is Table 11 at the end of the report.

Long discussion of the structure and movement of ocean currents. Dr. Collins is a brilliant scientist, such depth in oceanography. He uses vocabulary during his explanations that need explanation in themselves. The Great Lakes and fresh water bodies are a lot simpler.

Discussed with Dr. Collins the military value of the studies we are doing. He said the military does sea floor mapping, looks for mines and things on the sea floor. He explained that there are levels of optimum transmission of sound, channels for submarines. Determining these best channels relates to the salinity and temperature

Bed @ 01:00 June 7th